

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

APPELLANT'S MAIN BRIEF ON APPEAL

Appellants: Tsuyonobu Hatazawa et al.)	Group Art Unit: 1745
)	
Docket No. 9792909-4673)	Examiner: J. Crepeau
)	
Application No. 09/718,767)	
)	
Filed: November 22, 2000)	
)	
Title: NONAQUEOUS ELECTROLYTE)	
BATTERY)	

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In accordance with the provisions of 37 C.F.R. §41.37, Appellants submit this Main Brief on Appeal pursuant to the Notice of Appeal filed on September 2, 2008, in the above-identified application.

The Commissioner is hereby authorized to charge any deficiency in fees associated with this communication or credit any overpayment to Deposit Account No. 19-3140.

Respectfully submitted,

By: /David R. Metzger/

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I. REAL PARTY IN INTEREST:

The real party in interest in the present appeal is the Assignee, Sony Corporation. The assignment was recorded in the U.S. Patent and Trademark Office at Reel 011875, Frame 0902.

II. RELATED APPEALS AND INTERFERENCES:

Appellants are not aware of any related appeals or interferences.

III. STATUS OF CLAIMS:

Claims 1, 4, 5 and 8-11 are pending and under consideration in the application. Claims 2, 3, 6 and 7 have been cancelled.

The present appeal is directed to claims 1, 4, 5 and 8-11, which were finally rejected in an Office Action dated July 1, 2008.

A copy of claims 1-11 is appended hereto as the Claims Appendix.

The status of the claims on appeal is as follows:

A) Claims 1, 5 and 8-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Nakane et al.* (EP 0895296), *Chaloner-Gill* (U.S. Pat. No. 5,445,856), *Bullock et al.* (U.S. Pat. No. 5,219,676) and *Gozdz et al.* (U.S. Pat. No. 5,607,485).

B) Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Nakane et al.*, *Chaloner-Gil*, *Bullock et al.*, *Gozdz et al.* and *Wedlake*.

IV. STATUS OF AMENDMENTS:

All amendments have been entered in this application.

V. SUMMARY OF CLAIMED SUBJECT MATTER:

Claims 1, 4-6, and 8-11 are currently pending. Claim 1 is the only independent claim under consideration. Claims 4-6, and 8-11 depend directly or indirectly from independent claim 1.

Application Figures 1, 5 and 7 are reproduced below:

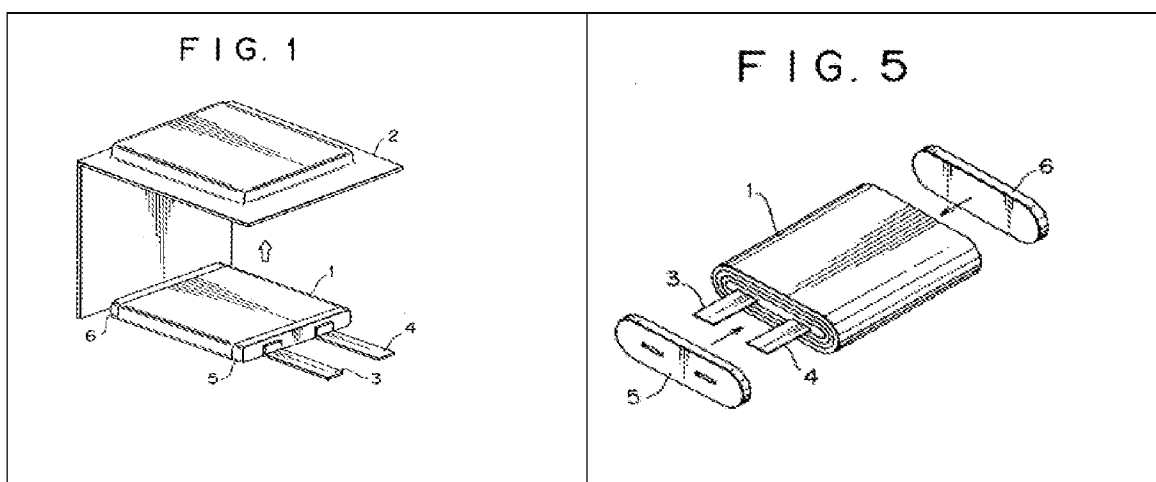
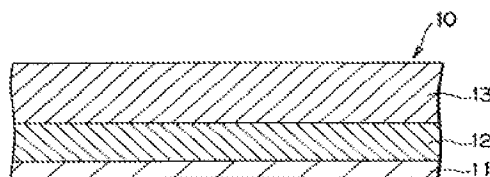


FIG. 7



Independent claim 1 is summarized below.

Claim 1:

Referring to Figures 1, 5 and 7 as illustrative examples, claim 1 claims a nonaqueous electrolyte battery comprising:

an outer covering member 2 including a laminated film 10 having an outermost layer;

a battery element 1 contained in the outer covering member 2 and sealed therein by heat seal, the battery element 1 having a positive electrode 4 and a negative electrode 3 each having a gel electrolyte at a portion thereof, the portions of the positive 4 and negative electrodes 3 being laminated to each other and pressed and wound such that the battery element 1 is a winding type gel electrolyte battery element, the battery element 1 having a first end at which first wound edges are located and a second end, which is opposite the first end, at which second wound edges are located, the gel electrolyte comprising a plasticizer containing a lithium salt and a matrix high polymer in an amount of 2 wt% to 30 wt%, the matrix high polymer comprising a fluorine based high polymer selected from the group of polyvinylidene fluoride and vinylidene fluoride-hexafluoropropylene copolymer, (See, Specification Pages 5-6 and 17; Figs. 1 and 7).

the outer covering member 2 including a gas absorbable material and resin material interposed between the outermost layer of said outer covering member and said battery element, the gas absorbable material being one of molecular sieve and silica gel, a content of the gas absorbable material being in a range of 0.1wt% to 95wt% on a basis of a weight of the resin material, the gas absorbable material and the resin material having a thickness in a range of 1 μ m to 500 μ m; (See, Specification Pages 5-6; Figs. 1).

a first gas absorbable member 5 positioned at the first end of the battery element 1 adjacent the first wound edges of the battery element 1 and positioned between the battery element 1 and the outer covering member 2, the first gas absorbable member 5 not being a part of the outer covering member 2; and (See, Specification Pages 5-6; Figs. 1 and 5)

a second gas absorbable member 6 positioned at the second end of the battery element 1 adjacent the second wound edges of the battery element 1 and positioned between the battery

element 1 and the outer covering member 2, the second gas absorbable member 6 not being a part of the outer covering member 2; (See, Specification Pages 5-6; Figs. 1 and 5)

said first 5 and second gas absorbable members 6 each being a continuous solid member; (See, Specification Pages 5-6 and 17; Figs. 1 and 5)

said outer covering member 2 having a first outer covering member and a second outer covering member, the first outer covering member and the second outer covering member being a single common piece of material; (See, Specification Pages 5-6 and 17; Figs. 1 and 5).

said first outer covering member having a recessed portion accommodating the battery element 1; (See, Specification Pages 5-6 and 17; Figs. 1 and 5).

said second outer covering member extending from one side of the first outer covering member and folded onto the first outer covering member covering the battery element 1 and the recessed portion. (See, Specification Pages 5-6 and 17; Figs. 1 and 5).

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL:

The following ground of rejection is to be reviewed on appeal:

Whether claims 1, 4, 5 and 8-11 are patentable under 35 U.S.C. §103(a) over *Nakane et al.* (EP 0895296, *Chaloner-Gill* (U.S. Pat. No. 5,445,856), *Bullock et al.* (U.S. Pat. No. 5,219,676) and *Gozdz et al.* (U.S. Pat. No. 5,607,485).

Whether claim 5 is separately patentable over *Nakane et al.*, *Chaloner-Gill*, *Gozdz et al.* and *Bullock et al.*

Whether claim 4 is separately patentable over *Nakane et al.*, *Chaloner-Gill*, *Bullock et al.*, *Gozdz et al.* and *Wedlake*.

VII. ARGUMENT:

A. Nakane, Chaloner-Gill, Bullock et al. and Gozdz et al. Do Not Teach Gas Absorption Members As Called For In Independent Claim 1

Claim 1, 4, 5 and 8-11 are not unpatentable under 35 U.S.C. §103(a) based on the teachings of *Nakane*, *Chaloner-Gill*, *Bullock et al.* or *Gozdz et al.* Appellants' respectfully submit the Examiner's assertions are incorrect as a matter of fact and law. Thus, for the reasons set forth below, Appellants' respectfully request that this Board reverse the rejection of claim 1.

In relevant part, independent claim 1 recites first and second gas absorbable members positioned at a first and second end of a battery which are each formed as a continuous solid member. These are recited in addition to the positive and negative electrodes and the gel

electrolyte. Thus, these gas absorbable members are in addition to the anode, cathode and electrolyte.

Nakane discloses a battery including an inorganic oxide fine powder which is present within the electrolyte, anode or cathode of a battery to absorb water in the electrolyte thereby decreasing the hydrolysis reaction between the electrolyte salt and the electrolyte organic solvent. EP 0895296, Para. [0013] & [0031]. Specifically, *Nakane* states that “the fine powder **absorbs water contained in the organic solvent** so that the hydrolysis reaction between the water in the organic solvent and electrolyte salt can be restrained” and that the fine powder prevents the production of hydrofluoric acid due to the reaction of the electrolyte with water. See, EP 0895296, Para. [0032] & [0033]. In addition, *Nakane* states that:

“The average particle diameter of the inorganic **fine powder** is preferably 20 μm or less and more preferably 5 μm or less. By use of the inorganic oxide **fine powder** having an average particle diameter of 5 μm or less, enough specific surface area can be ensured to absorb hydrofluoric acid, etc to be produced. **On the other hand, if it exceeds 20 μm , enough specific surface area cannot be obtained so that the hydrofluoric acid, etc cannot be satisfactorily absorbed.**” See, EP 0895296, Para. [0036].

As such, the *Nakane* powder functions to absorb liquids, namely water and hydrofluoric acid, and not gas, as required by the claims.

Additionally, *Nakane's* fine powder is made up of individual particles which do not form **a continuous solid member**. See, EP 0895296, Para. [0014]-[0015]. In defining the fine powder *Nakane* discloses numerous particles of a defined size which can be mixed with other materials such as an electrolyte. See, EP 0895296, Para. [0036]. Clearly, a powder comprised of a collection of particles does not constitute a solid member. While each particle can be said to be solid, the powder itself is not solid. Therefore, *Nakane* discloses a non solid powder absorption member and fails to disclose or even suggest a solid gas absorption member.

Further, *Nakane* does not disclose gas absorption members made of a continuous solid

member located at a first and a second end of a battery separate and apart from the electrolyte. Instead, *Nakane* discloses a fine power mixed into an electrolyte which is used to absorb water and hydrofluoric acid in an electrolyte preventing the degradation in the degree of sealing due to the reaction between the cell components and water. See, EP 0895296, Para. [0009]. This is clearly unlike the separate continuous solid gas absorption members of the claimed invention which are positioned at a first and a second end of a battery to absorb the gases generated by all of the components of the battery. See, Specification Page, 17, lines 2-12.

Chaloner-Gill, similarly, fails to disclose anything pertaining to first and second gas absorbable members positioned at a first and second end of a battery which are each formed as a continuous solid member. Instead, *Chaloner-Gill* discloses a laminated water and oxygen barrier which surrounds an electrochemical cell and is comprised of a series of individual layers joined together which are used to protect the electrochemical cell from the intrusion of water and oxygen. There is nothing to indicate that these layers are gas absorbers. See, 5,607,485, Col 7, l. 1-60 (“*Chaloner-Gill*”). Since *Chaloner-Gill* discloses a multilayer oxygen and water barrier and not a gas absorber, it fails to disclose a required element of the claim.

Bullock et al., similarly, fails to disclose anything pertaining to first and second gas absorbable members positioned at a first and second end of a battery which are each formed as a continuous solid member. Instead, *Bullock et al.* discloses a desiccant filled bag which surrounds an electrochemical cell and is used to prevent water from entering a electrochemical battery. This is not a gas absorber, much less one that is formed as a continuous solid member. See, U.S. Pat. No. 5,219,676, Col. 6, l. 9-35. Since *Bullock et al.* discloses a liquid absorption layer which surrounds a electrochemical battery, and not a gas absorber, it fails to disclose a required element of the claims.

Gozdz et al., similarly, fails to disclose anything pertaining to first and second gas absorbable members positioned at a first and second end of a battery which are each formed as a continuous solid member. Instead, *Gozdz et al.* discloses a series of VdF-HFP separators in a battery. See, 5,607,485, Col 6, l. 14-22 (“*Gozdz et al.*”). These separators clearly are not gas absorbers. Thus, *Gozdz et al.* fails to disclose any gas absorption layer, much less a gas absorption layer being a continuous solid member. Therefore, *Gozdz et al.* fails to disclose a required element of the claim.

As the present application discloses, the gas absorption members of the claimed invention are effective to absorb carbon dioxide, propane, propylene and evaporated propylene carbonate gases which are produced during the operation of the battery and which may collect at the first and second ends of a battery. See, Specification Page 8, lines 10-12.

Again, in contrast, the fine powder used in *Nakane* is effective to absorb water and any hydrofluoric acid generated in the electrolyte only. See, EP 0895296, Para. [0009]. Since *Nakane* discloses a fine powder mixed with an electrolyte which is effective to restrict reactions in the electrolyte only, it cannot produce the same benefits as the claimed invention. *Gozd, Chaloner-Gill, and Bullock et al.*, similarly, fail to disclose or even suggest anything pertaining to similar gas absorption layers.

In the Office Action of July 1, 2008, the Examiner asserts that the fine powder of *Nakane*, in aggregate form, would also inherently function as a “gas absorbable member” and that an artisan would be motivated to combine the fine powder of *Nakane* with the outer covering member of *Chaloner-Gill* to produce the claimed battery. See, Office Action of July 1, 2008, Page 2, line 10 - Page 3, line 11. However, both *Nakane* and *Chaloner-Gill* fail to disclose gas absorption members located at **a first and a second end of the battery**. Instead, *Nakane* discloses that the fine powder may be in the electrolyte or on the anode, cathode or separator of the battery and *Chaloner-Gill* discloses a laminated water and oxygen

barrier which **surrounds** an electrochemical cell. See, 5,607,485, Col 7, l. 1-60; See, EP 0895296, Para. [0031]. Accordingly, the combination of *Chaloner-Gill* and *Nakane* fails to produce first and second gas absorbable members positioned at a first and second end of a battery which are each formed as a continuous solid member.

Specifically, the purported combination of *Chaloner-Gill* and *Nakane* would produce a layer of fine powder surrounding a battery cell and not a solid continuous gas absorption member positioned on a first and second end of a battery. Further, *Chaloner-Gill* discloses using a laminated layer which **has low permeability** which would **restrict** gas from interacting with the gas absorption material in the layer thereby **inhibiting** the absorption of gas by the gas absorption member. See, See, 5,607,485, Col 7, l. 1-60.

As the Applicant's specification discloses, by positioning the gas absorption members at a first and a second end of a battery, gases produced by the battery are effectively absorbed without increasing the thickness of the battery. See, Specification, Page 15, Lines 9-25. Since the combination of *Chaloner-Gill* and *Nakane* would provide a layer of fine powder around the battery cell, the thickness of the battery would inherently be increased.

Therefore, *Nakane*, *Chaloner-Gill*, *Bullock et al.* and *Gozdz et al.*, and any possible combination of them fails to disclose or even suggest the subject matter claimed subject matter in claim 1 as required 35 U.S.C. §103. Since claims 4, 5 and 8-11 depend directly or indirectly from claim 1 and are allowable for at least the same reasons.

Applicant respectfully submits the rejection is wrong, and requests that it be reversed.

B. The Cited Art Does Not Disclose or Fairly Teach Mixing a Second Gas Absorbable Material With A Resin as Called for in Claim 5

In relevant part, dependant claim 5 recites a nonaqueous electrolyte battery according to claim 1, wherein first and second gas absorbable members each include a second gas absorbable material that is **mixed with a second resin material** and the mixture is molded to

form the first and second gas absorbable members, and the first and second gas absorbable members are inserted between the outermost layer of the outer covering member and at least one or more planes of the battery element. And as set forth above, the first and second gas absorbable members necessarily are separate and apart and in addition to any electrolyte layer, cathode or anode.

This is clearly unlike, *Nakane* which fails to disclose or even fairly suggest first and second gas absorbable members each including a second gas absorbable material that is mixed with a second resin material and the mixture being molded to form the first and second gas absorbable members, and the first and second gas absorbable members being inserted between the outermost layer of the outer covering member and at least one or more planes of the battery element. Instead, as stated above, *Nakane* discloses a battery including an inorganic oxide **fine powder** which is mixed in the electrolyte, a cathode or an anode. See, EP 0895296, Para. [0016]-[0017] & [0031]. Nowhere does *Nakane* disclose **mixing a resin material** with a gas absorption material which is then molded into first and second gas absorption layers. Therefore, *Nakane* fails to recite a required element of claim 5.

Chaloner-Gill, similarly, fails to disclose or even fairly suggest first and second gas absorbable members each including a second gas absorbable material that is mixed with a second resin material and the mixture being molded to form the first and second gas absorbable members, and the first and second gas absorbable members being inserted between the outermost layer of the outer covering member and at least one or more planes of the battery element. Instead, as stated above, *Chaloner-Gill* discloses a laminated water and oxygen barrier which surrounds an electrochemical cell and is comprised of a series of individual layers joined together which are used to protect the electrochemical cell from the intrusion of water and oxygen. See, 5,607,485, Col 7, l. 1-60 (“*Chaloner-Gill*”). Nowhere does *Chaloner-Gill* disclose **mixing a resin material** with a gas absorption material which is

then molded into first and second gas absorption layers. Therefore, *Chaloner-Gill* fails to recite a required element of claim 5.

Bullock et al., similarly, fails to disclose or even fairly suggest first and second gas absorbable members each including a second gas absorbable material that is mixed with a second resin material and the mixture being molded to form the first and second gas absorbable members, and the first and second gas absorbable members being inserted between the outermost layer of the outer covering member and at least one or more planes of the battery element. Instead, *Bullock et al.*, as stated above, discloses a desiccant filled bag which surrounds an electrochemical cell and is used to prevent water from entering a electrochemical battery. See, U.S. Pat. No. 5,219,676, Col. 6, l. 9-35. Nowhere does *Bullock et al.* disclose mixing a resin material with a gas absorption material which is then molded into first and second gas absorption layers. Therefore, *Bullock et al.* fails to recite a required element of claim 5

Gozdz et al., similarly, fails to disclose mixing a resin material with a gas absorption material which is molded into a first and second gas absorption layer. In fact, *Gozdz et al.* fails to disclose any gas absorption material, much less the mixing of a gas absorption material with a resin material. Therefore, *Gozdz et al.* fails to disclose a required element of the claim.

Therefore, *Nakane*, *Chaloner-Gill*, *Bullock et al.*, and *Gozdz et al.*, and any possible combination of them fail to disclose or even suggest the subject matter claimed in claim 5 as required 35 U.S.C. §103.

Applicant respectfully submits the rejection is wrong, that claim 5 is patentable for these additional reasons, and requests that the rejection of claim 5 be reversed.

C. **The Cited Art Does Not Disclose Fairly Suggest Providing the Nakane Battery With A Carbon Molecular Sieve as Called for in Claim 4**

In relevant part, dependant claim 4 recites that the gas absorption material of claim 1 is a carbon molecular sieve.

As stated above, *Nakane*, uses a fine powder dispersed within an electrolyte in order to eliminate the production of unwanted gases. There would be no motivation to additionally include a carbon sieve, as taught by *Wedlake*, because the *Wedlake* sieve does not serve to absorb gases.

As also noted above, neither *Chaloner-Gill*, *Bullock et al*, nor *Gozdz et al*. provides any further disclosure or suggestion to add two gas absorbing members as called for in the claims to the *Nakane* battery.

Wedlake discloses the use of molecular sieves of sorts to **surround an entire cell of a car battery** to **absorb the contents of the cell** which have escaped from the cell. See, *Wedlake*, Col 3, l. 1 - Col. 4 l. 65. Nowhere does *Wedlake* disclose or even suggest that a molecular carbon sieve is suitable for absorbing gases, particularly those generated during charging and discharging of a gel electrolyte battery. Indeed, *Wedlake* is irrelevant to the present invention, because use of the gel electrolyte eliminates the problems which *Wedlake* attempts to address, namely capturing hazardous and dangerous wet battery cell contents after a catastrophe occurs to the battery. It is submitted that one of ordinary skill in the art would find no suggestion in *Wedlake* to add carbon molecular sieves to a gel electrolyte battery to absorb gases.

Further, because the *Wedlake* sieve is directed to absorbing liquids, it is not suitable for absorbing gases as called for in the claims. There is no indication how one of ordinary skill in the art would be suggested to modify the *Wedlake* sieve, if that is indeed possible, to absorb gases as required by the claims.

As such, the rejection is based on an erroneous view of *Wedlake*'s teachings, and in any event, the purported combination would not function as claimed in claim 4.

Additionally, as Applicant's specification teaches, by limiting the size of the gas absorption layers to the first and second sides of the battery, a smaller more compact battery is provided. See, Page 15, lines 9-24. Since *Wedlake* discloses surrounding the cell of a battery with a micromolecular sieve, it fails to produce the benefits provided by the claimed subject matter, and indeed teaches against, the invention.

Therefore, *Nakane*, *Chaloner-Gill*, *Bullock et al.*, *Gozdz et al.*, and *Wedlake* and any possible combination of them fail to disclose or even suggest the subject matter claimed in claim 4 as required 35 U.S.C. §103

VIII. CONCLUSION:

For the foregoing reasons, Appellants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Appellants respectfully request the Board reverse the rejections of claims 1, 4, 5 and 8-11.

Respectfully submitted,

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CLAIMS APPENDIX

1. (Previously Presented) A nonaqueous electrolyte battery comprising:
 - an outer covering member including a laminated film having an outermost layer;
 - a battery element contained in the outer covering member and sealed therein by heat seal, the battery element having a positive electrode and a negative electrode each having a gel electrolyte at a portion thereof, the portions of the positive and negative electrodes being laminated to each other and pressed and wound such that the battery element is a winding type gel electrolyte battery element, the battery element having a first end at which first wound edges are located and a second end, which is opposite the first end, at which second wound edges are located, the gel electrolyte comprising a plasticizer containing a lithium salt and a matrix high polymer in an amount of 2 wt% to 30 wt%, the matrix high polymer comprising a fluorine based high polymer selected from the group of polyvinylidene fluoride and vinylidene fluoride-hexafluoropropylene copolymer,;
 - the outer covering member including a gas absorbable material and resin material interposed between the outermost layer of said outer covering member and said battery element, the gas absorbable material being one of molecular sieve and silica gel, a content of the gas absorbable material being in a range of 0.1wt% to 95wt% on a basis of a weight of the resin material, the gas absorbable material and the resin material having a thickness in a range of 1 μm to 500 μm ;
 - a first gas absorbable member positioned at the first end of the battery element adjacent the first wound edges of the battery element and positioned between the battery element and the outer covering member, the first gas absorbable member not being a part of the outer covering member; and
 - a second gas absorbable member positioned at the second end of the battery element adjacent the second wound edges of the battery element and positioned between the battery element and the outer covering member, the second gas absorbable member not being a part of the outer covering member;
 - said first and second gas absorbable members each being a continuous solid member;
 - said outer covering member having a first outer covering member and a second outer covering member, the first outer covering member and the second outer covering member being a single common piece of material;
 - said first outer covering member having a recessed portion accommodating the battery element;

said second outer covering member extending from one side of the first outer covering member and folded onto the first outer covering member covering the battery element and the recessed portion.

2. (Canceled).

3. (Canceled).

4. (Previously Presented) A nonaqueous electrolyte battery according to claim 1, wherein said gas absorbable material is carbon molecular sieve.

5. (Previously Presented) A nonaqueous electrolyte battery according to claim 1, wherein first and second gas absorbable members each include a second gas absorbable material that is mixed with a second resin material and the mixture is molded to form said first and second gas absorbable members, and said first and second gas absorbable members are inserted between the outermost layer of said outer covering member and at least one or more planes of said battery element.

6. (Canceled).

7. (Canceled).

8. (Previously Presented) A nonaqueous electrolyte battery according to claim 1, wherein the negative electrode of said battery element contains a material in or from which lithium is allowed to be doped or undoped.

9. (Original) A nonaqueous electrolyte battery according to claim 8, wherein said material in or from which lithium is allowed to be doped or undoped is a carbon material.

10. (Previously Presented) A nonaqueous electrolyte battery according to claim 1, wherein the positive electrode of said battery element contains a composite oxide of lithium and a transition metal.

11. (Original) A nonaqueous electrolyte battery according to claim 1, wherein said battery is a secondary battery.

EVIDENCE APPENDIX

Appellants do not submit additional evidence with this appeal brief and no additional evidence has been submitted during prosecution.

RELATED PROCEEDINGS APPENDIX

Appellants are not aware of any related appeals or interferences with regard to the present application.